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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/079,872	02/22/2002	Akira Morikawa	219655US0	7880

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1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER
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WRIGHT, WILLIAM G

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 10/08/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

1-28

<b>Office Action Summary</b>	<b>Application No.</b> 10/079,872	<b>Applicant(s)</b> MORIKAWA ET AL	
	<b>Examiner</b> William G. Wright SR.	<b>Art Unit</b> 1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 13-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-22 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 and 4. 6) ☐ Other:

Art Unit 1754

Restriction to one of the following inventions is required under 35 U.S.C. § 121:

I. Claims 1-12, drawn to a composite oxide powder, classified in Class 501, subclass 1+.

II. Claim 13, drawn to a catalyst composition, classified in Class 502, subclass 300+.

III. Claims 14-22, drawn to a method of making a composite oxide powder, classified in Class 423, subclass 592.1.

The inventions are distinct, each from the other because of the following reasons:

Inventions Group I and Group II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention Group I has separate utility such as use as a ceramic oxide composition. See MPEP § 806.05(d).

Inventions Group III and Group I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by a materially

Art Unit 1754

different process such as direct contact with the reactants in an aqueous solution and precipitation.

Inventions Group II and Group III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together, or they have different modes of operation, or they have different functions, or they have different effects. (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are unrelated as the catalyst composition may be made of art particles and the method of making the particles used as a component of a catalyst composition is not related to the catalyst composition per se.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

During a telephone conversation with Tom Barns on September 17, 2003 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-12. Affirmation of this election must be made by applicant in replying to this Office action. Claims 13-22 stand withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Art Unit 1754

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the

Art Unit 1754

examiner to consider the applicability of 35 U.S.C. § 103(c) and potential 35 U.S.C. § 102(f) or (g) prior art under 35 U.S.C. § 103(a).

Claims 1-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Zhang et al. '565 in view of Heidemann et al. '273.

Zhang teaches a nanocrystal cerium zirconium composite oxide with an application for gas treatment exhaust. These teachings are found at column 1 line 1 et seq. and in the claims. The Examples teach the exposure of the nanoparticles to temperatures of from 400°C to 900°C for treatment. The claims 3 and 6 of the primary reference teach silicon and aluminum. Surface area is also taught in the Examples.

The Zhang reference does not teach the feature of a shell used in a catalytic application.

Heidemann teaches an oxidation catalyst with small particle size at column 6 line 50 et seq. and claim 5. The reference teaches the use of a shell structure in claim 1 and claim 2.

The instant claims require the use of a shell shape in the structure of the instant catalyst and this feature is found in the claims 1 and 2 of the supporting reference. Both references are to catalytic utility and the shell structure is taught to be of use in the formation of a catalyst. The teaching of applied

Art Unit 1754

powders to form the shell are found in claim 2 of the reference. It would be obvious to apply the teaching of the use of a shell structure found in Heidemann to disclose the instant invention because it is well taught in Heidemann that this structure provides for a better catalyst. Thus a practitioner would have motivation to improve a catalyst by using the powders in a shell shape in said catalyst.

Claims 1-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Suzuki et al. '794 or Brezny et al. '451 or Suzuki et al. '288 each in view of Heidemann et al. '273.

Suzuki '794 teaches nanoparticle metal oxide composite catalysts at the Abstract and the claims. Ceria and zirconia with aluminum is taught at claim 6. Claim 12 teaches a particle diameter of 30 nanometers or less. Threeway catalysis and oxygen storage are taught at column 1 line 14 et seq. Brezny teaches exhaust gas catalysts with oxygen storage and nanosize particles in the Abstract and the claims. The claims also teach the domain size of from 10 to 30 Angstrom units in claim 21. The Examples teach the treatment of the powders at elevated temperatures. Suzuki '288 teaches nanoscale composite oxide catalysts for the gas treatment utility. Ceria zirconia with alumina is taught in the prior art found in column 1. The reference teaches cerium, zirconium and aluminum at column 2 line 32 et seq., and at column

Art Unit 1754

7 line 48 et seq., as well. Nanoscale size particles are taught at column 15 line 34 and in the claims at claim 1.

The specific use of shell structure for the catalyst is missing from each of the primary references.

Heidemann teaches the use of a shell structure for oxidation catalysts in the Abstract and claims. The shell structure formed with oxide powders is taught to be an active catalyst in claim 2.

The instant claimed invention is obvious in view of the reference combinations. All references are to catalytic utility and the supporting reference teaches the use of a shell structure for catalyst in claim 2. It would be obvious to a practitioner to apply the desirable teachings of the shell structure found in Heidemann to disclose the instant invention. Thus motivation is found in the supporting reference to improve a catalyst by using the powders in a shell shape in said catalyst.

Claims 1-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Rajaram et al. '762 or Dettling et al. '029 or Suda et al. '276 each in view of Heidemann.

Rajaram teaches nanoscale metal oxide particles for exhaust gas catalytic utility to include the elements cerium, zirconium and titanium at column 4 line 1 et seq. and column 3 line 10 et seq. The claims teach metal oxide particles of nanoscale size. Dettling teaches nanoscale metal oxide particles with the



Art Unit 1754

elements of cerium, zirconium and praseodymium in the Examples. Claim 20 teaches the elements of alumina, silica and titania in addition to ceria and zirconia. Nanoscale particle size is taught at column 4 line 30 et seq. Gas treatment utility is taught at the Abstract. Suda teaches titania zirconia with yttria for use in treating exhaust gas at column 3 line 20 et seq. The teaching for alumina is found in column 4 line 45 et seq. The use of a particle size of 0.1 micrometers is found in claims 12 and 14. Example 10 teaches a temperature of 800°C or 900°C for 5 hours.

The specific use of a shell structure for the catalyst is missing from each of the primary references.

Heidemann teaches the use of a shell structure for oxidation catalyst in the Abstract and claims. This shell structure formed with oxide powders is taught to be an active catalyst in claim 2.


The instant claimed invention is obvious in view of the reference combinations. All of the references are to catalytic utility and the supporting reference teaches the use of a shell structure for catalysts in claim 2. It would be obvious to a practitioner to apply the desirable teachings of the shell structure found in Heidemann to disclose the instant invention. Thus a practitioner has motivation to improve a catalyst by using the powders in a shell shape in said catalysts.

Art Unit 1754

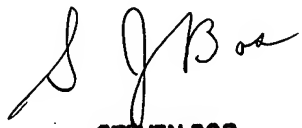
Any inquiry concerning this communication or earlier communications from the examiner should be directed to William G. Wright, Sr. whose telephone number is (703) 305-7792. The examiner can normally be reached on Monday through Thursday from 6:30 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on (703) 308-3837. The fax phone number for the organization where this application or proceeding is assigned are (703) 872-9306 for the regular communications and (703) 872-9311 for after final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1495.

  
W. G. Wright, Sr.:cdc

September 30, 2003

  
**STEVEN BOS  
PRIMARY EXAMINER  
GROUP 1100**